



#15

SEQUENCE LISTING

<110> Liu, et al.

<120> Screens and Assays for Agents Useful in Controlling
Parasitic Nematodes

<130> 2002630-0012

<140> 10/051,644

<141> 2002-01-18

<160> 8

<170> PatentIn Ver. 2.1

<210> 1

<211> 425

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:VAP-1 Amino
Acid Sequence

<400> 1

Met Ala Val Leu Ala Val Val Leu Leu Leu Ala Cys Leu Glu Arg Ala
1 5 10 15Val Ala Gln Thr Phe Gly Cys Ser Asn Thr Lys Ile Asn Asp Gln Ala
20 25 30Arg Lys Met Phe Tyr Asp Ala His Asn Asp Ala Arg Arg Ser Met Ala
35 40 45Lys Gly Leu Glu Pro Asn Lys Cys Gly Leu Leu Ser Gly Gly Lys Asn
50 55 60Val Tyr Glu Leu Asn Trp Asp Cys Glu Met Glu Ala Lys Ala Gln Glu
65 70 75 80Trp Ala Asp Gly Cys Pro Ser Ser Phe Gln Thr Phe Asp Pro Thr Trp
85 90 95Gly Gln Asn Tyr Ala Thr Tyr Met Gly Ser Ile Ala Asp Pro Leu Pro
100 105 110

Tyr Ala Ser Met Ala Val Asn Gly Trp Trp Ser Glu Ile Arg Thr Val

115	120	125
Gly Leu Thr Asp Pro Asp Asn Lys Tyr Thr Asn Ser Ala Met Phe Arg		
130	135	140
Phe Ala Asn Met Ala Asn Gly Lys Ala Ser Ala Phe Gly Cys Ala Tyr		
145	150	155
Ala Leu Cys Ala Gly Lys Leu Ser Ile Asn Cys Ile Tyr Asn Lys Ile		
165	170	175
Gly Tyr Met Thr Asn Ala Ile Ile Tyr Glu Lys Gly Asp Ala Cys Thr		
180	185	190
Ser Asp Ala Glu Cys Thr Thr Tyr Ser Asp Ser Gln Cys Lys Asn Gly		
195	200	205
Leu Cys Tyr Lys Ala Pro Gln Ala Pro Val Val Glu Thr Phe Thr Met		
210	215	220
Cys Pro Ser Val Thr Asp Gln Ser Asp Gln Ala Arg Gln Asn Phe Leu		
225	230	235
Asp Thr His Asn Lys Leu Arg Thr Ser Leu Ala Lys Gly Leu Glu Ala		
245	250	255
Asp Gly Ile Ala Ala Gly Ala Phe Ala Pro Met Ala Lys Gln Met Pro		
260	265	270
Lys Leu Val Lys Tyr Ser Cys Thr Val Glu Ala Asn Ala Arg Thr Trp		
275	280	285
Ala Lys Gly Cys Leu Tyr Gln His Ser Thr Ser Ala Gln Arg Pro Gly		
290	295	300
Leu Gly Glu Asn Leu Tyr Met Ile Ser Ile Asn Asn Met Pro Lys Ile		
305	310	315
Gln Thr Ala Glu Asp Ser Ser Lys Ala Trp Trp Ser Glu Leu Lys Asp		
325	330	335
Phe Gly Val Gly Ser Asp Asn Ile Leu Thr Gln Ala Val Phe Asp Arg		
340	345	350
Gly Val Gly His Tyr Thr Gln Met Ala Trp Glu Gly Thr Thr Glu Ile		
355	360	365
Gly Cys Phe Val Glu Asn Cys Pro Thr Phe Thr Tyr Ser Val Cys Gln		

370	375	380
Tyr Gly Pro Ala Gly Asn Tyr Met Asn Gln Leu Ile Tyr Thr Lys Gly		
385	390	400
Ser Pro Cys Thr Ala Asp Ala Asp Cys Pro Gly Thr Gln Thr Cys Ser		
405	410	415
Val Ala Glu Ala Leu Cys Val Ile Pro		
420	425	

<210> 2

<211> 1341

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:VAP-1 cDNA

Nucleotide Sequence

<400> 2

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aatgatgcaa gacgaagcat ggctaaaggg cttgagccaa acaagtgcgg actcttatct 180
ggtggaaga atgtttatga attgaattgg gattgcgaga tggaagcaaa agctcaggaa 240
tgggcagacg gatgtcccag ctctttccag acatttgatc caacatgggg gcagaactac 300
gcgacgtaca tgggatcgat tgctgatccg cttccatacg cttccatggc tggtaatggg 360
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gcgttgtgcg caggaaaact atccatcaat tgcatttaca acaagatagg atacatgacc 540
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actttcacaa tgtgcccttc ggtcacggac cagtcggatc aggcgcgtca aaacttcttg 720
gacacccata acaaatgtcg tacaagcctt gccaagggac ttgaagctga tggaattgcc 780
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<210> 3

<211> 473

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:VAP-2 Amino
Acid Sequence

<400> 3

Met	Asn	Val	Val	Leu	Ser	Ala	Val	Thr	Leu	Phe	Leu	Ile	Phe	Arg	Tyr
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Ala	Gln	Thr	Val	Asn	Ile	Glu	Gly	Ser	Gly	Gly	Asn	Asp	Glu	Leu	Leu
			20					25					30		

Glu	Gln	Asn	Val	Trp	Asn	Asp	Val	Asp	Asp	Lys	Val	Val	Glu	Ala	Leu
		35					40						45		

Gly	Gly	Leu	Asp	Asp	Glu	Leu	Leu	Thr	Glu	His	Val	Cys	Asn	Lys	Ser
	50					55					60				

Thr	Ile	Thr	Gln	Leu	Gln	Gln	Glu	Ile	Ile	Leu	Thr	Thr	His	Asn	Glu
65				70						75					80

Leu	Arg	Arg	Ser	Leu	Ala	Phe	Gly	Lys	Gln	Arg	Asn	Lys	Arg	Gly	Leu
				85					90					95	

Met	Asn	Gly	Ala	Arg	Asn	Met	Tyr	Lys	Leu	Asp	Trp	Asp	Cys	Glu	Leu
			100					105					110		

Ala	Ser	Leu	Ala	Ala	Asn	Trp	Ser	Thr	Ser	Cys	Pro	Gln	His	Phe	Met
		115					120					125			

Pro	Gln	Ser	Val	Leu	Gly	Ser	Asn	Ala	Gln	Leu	Phe	Lys	Arg	Phe	Tyr
	130					135					140				

Phe	Tyr	Phe	Asp	Gly	His	Asp	Ser	Thr	Val	His	Met	Arg	Asn	Ala	Met
145					150					155				160	

Lys	Tyr	Trp	Trp	Gln	Gln	Gly	Glu	Glu	Lys	Gly	Asn	Glu	Asp	Gln	Lys
			165						170					175	

Asn	Arg	Phe	Tyr	Ala	Arg	Arg	Asn	Tyr	Phe	Gly	Trp	Ala	Asn	Met	Ala
			180					185					190		

Lys	Gly	Lys	Thr	Tyr	Arg	Val	Gly	Cys	Ser	Tyr	Ile	Met	Cys	Gly	Asp
	195						200					205			

Gly Glu Ser Ala Leu Phe Thr Cys Leu Tyr Asn Glu Lys Ala Gln Cys
 210 215 220

Glu Lys Glu Met Ile Tyr Glu Asn Gly Lys Pro Cys Cys Glu Asp Lys
 225 230 235 240

Asp Cys Phe Thr Tyr Pro Gly Ser Lys Cys Leu Val Pro Glu Gly Leu
 245 250 255

Cys Gln Ala Pro Ser Met Val Lys Asp Asp Gly Gly Ser Phe Gln Cys
 260 265 270

Asp Asn Ser Leu Val Ser Asp Val Thr Arg Asn Phe Thr Leu Glu Gln
 275 280 285

His Asn Phe Tyr Arg Ser Arg Leu Ala Lys Gly Phe Glu Trp Asn Gly
 290 295 300

Glu Thr Asn Thr Ser Gln Pro Lys Ala Ser Gln Met Ile Lys Met Glu
 305 310 315 320

Tyr Asp Cys Met Leu Glu Arg Phe Ala Gln Asn Trp Ala Asn Asn Cys
 325 330 335

Val Phe Ala His Ser Ala His Tyr Glu Arg Pro Asn Gln Gly Gln Asn
 340 345 350

Leu Tyr Met Ser Ser Phe Ser Asn Pro Asp Pro Arg Ser Leu Ile His
 355 360 365

Thr Ala Val Glu Lys Trp Trp Gln Glu Leu Glu Glu Phe Gly Thr Pro
 370 375 380

Ile Asp Asn Val Leu Thr Pro Glu Leu Trp Asp Leu Lys Gly Lys Ala
 385 390 395 400

Ile Gly His Tyr Thr Gln Met Ala Trp Asp Arg Thr Tyr Arg Leu Gly
 405 410 415

Cys Gly Ile Ala Asn Cys Pro Lys Met Ser Tyr Val Val Cys His Tyr
 420 425 430

Gly Pro Ala Gly Asn Arg Lys Asn Asn Lys Ile Tyr Glu Ile Gly Asp
 435 440 445

Pro Cys Glu Val Asp Asp Asp Cys Pro Ile Gly Thr Asp Cys Glu Lys
 450 455 460

Thr Thr Ser Leu Cys Val Ile Ser Lys
465 470

<210> 4
<211> 1422
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:VAP-2 cDNA
Nucleotide Sequence

<400> 4
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gacgacaagg ttgtagaagc acttggtggt cttgatgatg aactgctaac cgaacatgtg 180
tgtaacaaat caacgatcac tcagctacag caggagatca tcttgacaac ccacaatgaa 240
ttacgaagat cattggcttt cygaaagcaa agaaacaaga gaggtctcat gaacggtgcg 300
agaaatatgt ataaactgga ttgggattgt gaactggcat cacttgacgc caattggtca 360
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ataggacatt acactcagat ggctgggat cgtacttacc gtcttggttg tggaatcgca 1260
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<210> 5
<211> 218
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Clustal W
Alignment of VAP-1, VAP-2, and Selected Other

Nematode VA Proteins.

<400> 5

Met Phe Ser Pro Val Ile Val Ser Val Ile Phe Thr Ile Ala Phe Cys
1 5 10 15

Asp Ala Ser Pro Ala Arg Asp Gly Phe Gly Cys Ser Asn Ser Gly Ile
20 25 30

Thr Asp Lys Asp Arg Gln Ala Phe Leu Asp Phe His Asn Asn Ala Arg
35 40 45

Arg Arg Val Ala Lys Gly Val Glu Asp Ser Asn Ser Gly Lys Leu Asn
50 55 60

Pro Ala Lys Asn Met Tyr Lys Leu Ser Trp Asp Cys Ala Met Glu Gln
65 70 75 80

Gln Leu Cln Asp Ala Ile Gln Ser Cys Pro Ser Ala Phe Ala Gly Ile
85 90 95

Gln Gly Val Ala Gln Asn Val Met Ser Trp Ser Ser Ser Gly Gly Phe
100 105 110

Pro Asp Pro Ser Val Lys Ile Glu Gln Thr Leu Ser Gly Trp Trp Ser
115 120 125

Gly Ala Lys Lys Asn Gly Val Gly Pro Asp Asn Lys Tyr Asn Gly Gly
130 135 140

Gly Leu Phe Ala Phe Ser Asn Met Val Tyr Ser Glu Thr Thr Lys Leu
145 150 155 160

Gly Cys Ala Tyr Lys Val Cys Gly Thr Lys Leu Ala Val Ser Cys Ile
165 170 175

Tyr Asn Gly Val Gly Tyr Ile Thr Asn Gln Pro Met Trp Glu Thr Gly
180 185 190

Gln Ala Cys Lys Thr Gly Ala Asp Cys Ser Thr Tyr Lys Asn Ser Gly
195 200 205

Cys Glu Asp Gly Leu Cys Thr Lys Gly Pro
210 215

<210> 6

<211> 205

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Clustal W
Alignment of VAP-1, VAP-2, and selected other
nematode VA Proteins.

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Asp Val Pro Glu Thr Asn Gln Gln Cys Pro Ser Asn Thr Gly Met Thr
1 5 10 15

Asp Ser Val Arg Asp Thr Phe Leu Val His Asn Glu Phe Arg Ser Ser
20 25 30

Val Ala Arg Gly Leu Glu Pro Asp Ala Leu Gly Gly Asn Ala Pro Lys
35 40 45

Ala Ala Lys Met Leu Lys Met Val Tyr Asp Cys Glu Val Glu Ala Ser
50 55 60

Ala Ile Arg His Gly Asn Lys Cys Val Tyr Gln His Ser His Gly Glu
65 70 75 80

Asp Arg Pro Gly Leu Gly Glu Asn Ile Tyr Lys Thr Ser Val Leu Lys
85 90 95

Phe Asp Lys Asn Lys Ala Ala Lys Gln Ala Ser Gln Leu Trp Trp Asn
100 105 110

Glu Leu Lys Glu Phe Gly Val Gly Pro Ser Asn Val Leu Thr Thr Ala
115 120 125

Leu Trp Asn Arg Pro Gly Met Gln Ile Gly His Tyr Thr Gln Met Ala
130 135 140

Trp Asp Thr Thr Tyr Lys Leu Gly Cys Ala Val Val Phe Cys Asn Asp
145 150 155 160

Phe Thr Phe Gly Val Cys Gln Tyr Gly Pro Gly Gly Asn Tyr Met Gly
165 170 175

His Val Ile Tyr Thr Met Gly Gln Pro Cys Ser Gln Cys Ser Pro Gly
180 185 190

Ala Thr Cys Ser Val Thr Glu Gly Leu Cys Ser Ala Pro
195 200 205

<210> 7

<211> 207

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Clustal W
Alignment of VAP-1, VAP-2, and selected other
nematode VA proteins.

<400> 7

Met Asn Tyr Leu Leu Leu Val Val Ala Leu Ala Val Gly Cys Ser Ala
1 5 10 15

Asp Phe Gly Ser Ser Gly Gln Asn Gly Ile Ile Asn Ala His Asn Thr
20 25 30

Leu Arg Ser Lys Ile Ala Lys Gly Thr Tyr Val Ala Lys Gly Thr Gln
35 40 45

Lys Ser Pro Gly Thr Asn Leu Lys Met Lys Trp Asp Ser Ala Val
50 55 60

Ala Ala Ser Ala Gln Asn Tyr Ala Asn Gly Cys Pro Thr Gly His Ser
65 70 75 80

Gly Asp Ala Gly Leu Gly Glu Asn Leu Tyr Trp Tyr Trp Thr Ser Gly
85 90 95

Ser Leu Gly Asp Leu Asn Gln Tyr Gly Ser Ala Ala Ser Ala Ser Trp
100 105 110

Glu Lys Glu Phe Gln Asp Tyr Gly Trp Lys Ser Asn Leu Met Thr Ile
115 120 125

Asp Leu Phe Asn Thr Gly Ile Gly His Ala Thr Gln Met Ala Trp Ala
130 135 140

Lys Ser Asn Leu Ile Gly Cys Gly Val Lys Asp Cys Gly Arg Asp Ser
145 150 155 160

Asn Gly Leu Asn Lys Val Thr Val Val Cys Gln Tyr Lys Pro Gln Gly
165 170 175

Asn Phe Ile Asn Gln Tyr Ile Tyr Val Ser Gly Ala Thr Cys Ser Gly
180 185 190

Cys Pro Ser Gly Thr Ser Cys Glu Thr Ser Thr Gly Leu Cys Val
 195 200 205

<210> 8
 <211> 231
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:Clustal W
 Alignment of VAP-1, VAP-2, and selected other
 nematode VA proteins.

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 Thr Val Val Asn Ser Leu Thr Val Pro Glu Gln Asn Ala Val Val Asp
 20 25 30
 Cys Ile Asn Lys Tyr Arg Ser Gln Leu Ala Asn Gly Lys Thr Lys Asn
 35 40 45
 Lys Asn Gly Gly Asn Phe Pro Ser Gly Lys Asp Ile Leu Glu Val Ser
 50 55 60
 Tyr Ser Lys Asp Leu Glu Lys Ser Ala Gln Arg Trp Ala Asn Lys Cys
 65 70 75 80
 Ile Phe Asp His Asn Gly Thr Asp Leu Tyr Ser Gly Gly Lys Phe Tyr
 85 90 95
 Gly Glu Asn Leu Tyr Leu Asp Gly Asp Phe Glu His Lys Asn Ile Thr
 100 105 110
 Gln Leu Met Ile Asp Ala Cys Asn Ala Trp Trp Gly Glu Ser Thr Thr
 115 120 125
 Asp Gly Val Pro Pro Ser Trp Ile Asn Asn Phe Leu Pro Thr Asp Asn
 130 135 140
 Lys Glu Asn Asp Glu Lys Phe Glu Ala Val Gly His Trp Thr Gln Met
 145 150 155 160
 Ala Trp Ala Lys Thr Tyr Gln Ile Gly Cys Ala Leu Lys Val Cys His
 165 170 175

Lys Pro Asp Cys Asn Gly Asn Leu Ile Asp Cys Arg Tyr Tyr Pro Gly
 180 185 190

Gly Asn Gly Met Gly Ser Pro Ile Tyr Gln Gln Gly Lys Pro Ala Ser
 195 200 205

Gly Cys Gly Lys Ala Gly Pro Ser Thr Lys Tyr Ser Gly Leu Cys Lys
 210 215 220

Pro Asp Pro His Gln Asn Asn
 225 230